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Patent and Trademark Office

NOTICE OF ALLOWANCE AND ISSUE FEE DUE

IM22/0209

JAIMES SHER
UNIVATION TECHNOLOGIES LILC
5555 SAN FELIPE
SUITE 1950
HOUSTON TX 77056-2723

APPLICATION NO.	FILING DATE	TOTAL CLAIMS	EXAMINER AND GROUP ART UNIT	DATE MAILED
08/986,696	12/08/97	028	RABAGO, R	1713 02/09/01
First Named Applicant	JEJELOWO, 35 USC 154(b) term ext. = 0 Days.			

TITLE OF INVENTION POLYMERIZATION CATALYST SYSTEMS COMPRISING SUBSTITUTED HAFNOCENES

ATTY'S DOCKET NO.	CLASS-SUBCLASS	BATCH NO.	APPLN. TYPE	SMALL ENTITY	FEE DUE	DATE DUE
1 97U001	526-160.000	B81	UTILITY	NO	\$1240.00	05/09/01

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED.

THE ISSUE FEE MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED.

HOW TO RESPOND TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

- A. If the status is changed, pay twice the amount of the FEE DUE shown above and notify the Patent and Trademark Office of the change in status, or
- B. If the status is the same, pay the FEE DUE shown above.

If the SMALL ENTITY is shown as NO:

- A. Pay FEE DUE shown above, or
- B. File verified statement of Small Entity Status before, or with, payment of 1/2 the FEE DUE shown above.

II. Part B-Issue Fee Transmittal should be completed and returned to the Patent and Trademark Office (PTO) with your ISSUE FEE. Even if the ISSUE FEE has already been paid by charge to deposit account, Part B Issue Fee Transmittal should be completed and returned. If you are charging the ISSUE FEE to your deposit account, section "4b" of Part B-Issue Fee Transmittal should be completed and an extra copy of the form should be submitted.

III. All communications regarding this application must give application number and batch number. Please direct all communications prior to issuance to Box ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

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Washington, D.C. 20231

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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08/986,696 12/08/97 JEJELOWO M 97U001

IM22/0209

JAIMES SHER
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5555 SAN FELIPE
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HOUSTON TX 77056-2723

EXAMINER

RABAGO, R

ART UNIT

PAPER NUMBER

1713

24

DATE MAILED:

02/09/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Notice of Allowability

Application No.

08/986,696

Examiner

R. Rabago

Applicant(s)

Jejelowo et al.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance and Issue Fee Due or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 2/5/01.
2. ☒ The allowed claim(s) is/are 10-14, 16-23, 25-32 and 51-57.
3. ☐ The drawings filed on _____ are acceptable as formal drawings.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
- * Certified copies not received: _____.
5. ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. & 119(e).

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

6. ☐ Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient. A SUBSTITUTE OATH OR DECLARATION IS REQUIRED.
7. ☐ Applicant MUST submit NEW FORMAL DRAWINGS
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review(PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No. _____.
 - (b) ☐ including changes required by the proposed drawing correction filed _____, which has been approved by the examiner.
 - (c) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No. _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings. The drawings should be filed as a separate paper with a transmittal letter addressed to the Official Draftsperson.

8. ☐ Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Any reply to this letter should include, in the upper right hand corner, the APPLICATION NUMBER (SERIES CODE / SERIAL NUMBER). If applicant has received a Notice of Allowance and Issue Fee Due, the ISSUE BATCH NUMBER and DATE of the NOTICE OF ALLOWANCE should also be included.

Attachment(s)

- | | |
|--------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 1 <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 2 <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3 <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 4 <input type="checkbox"/> Interview Summary (PTO-413), Paper No. _____ |
| 5 <input type="checkbox"/> Information Disclosure Statements (PTO-1449), Paper No. _____ | 6 <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 7 <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit of Biological Material | 8 <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9 <input type="checkbox"/> Other |

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EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for the examiner's amendments to the claims was given in a telephone interview with Ms. Lisa Jones on 2/5/2001. The application has been amended as follows:

In the Specification:

Change the title to Polymerization Catalyst Systems Comprising Substituted Hafnocenes.

In the abstract, after the last sentence, add the following sentence -- The hafnocene

comprises at least one cyclopentadienyl ligand including at least one linear or iso alkyl substituent of at least 3 carbon atoms. --

In the Claims:

~~10.~~ (six times amended) A process for polymerizing olefin(s) excluding cyclic olefin(s) in the presence of a catalyst system comprising a hafnium metallocene catalyst compound having at least one cyclopentadienyl or cyclopentadienyl derived ligand substituted with at least one linear or iso alkyl group having from 3 to 10 carbon atoms, and an activator.

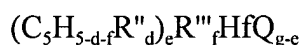
~~11.~~ 21. (six times amended) A continuous gas phase process for polymerizing olefin(s) excluding cyclic olefin(s) in a fluidized bed gas phase reactor in the presence of a catalyst system

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to produce a polymer product, the catalyst system comprising an activator and a hafnium metallocene catalyst compound having at least one cyclopentadienyl or cyclopentadienyl derived ligand substituted with at least one linear or iso alkyl group having from 3 to 10 carbon atoms, and the polymer product comprising less than 2 ppm hafnium.

~~1728~~. (six times amended) A continuous slurry phase process for polymerizing olefin(s) excluding cyclic olefin(s) in the presence of a catalyst system to produce a polymer product in a liquid polymerization medium, the catalyst system comprising an activator and a hafnium metallocene catalyst compound having at least one cyclopentadienyl or cyclopentadienyl derived ligand substituted with at least one linear or iso alkyl group having from 3 to 10 carbon atoms, and the polymer product comprising less than 2 ppm hafnium.

~~2122~~. (twice amended) The process in accordance with claim ~~28~~ wherein the catalyst system is represented by the formula:

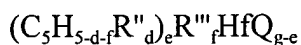


wherein $(C_5H_{5-d-f}R''_d)$ is an unsubstituted or substituted cyclopentadienyl ligand bonded to Hf, wherein at least one $(C_5H_{5-d-f}R''_d)$ is substituted with at least one R'' which is a linear or iso alkyl group having from 3 to 10 carbon atoms, each additional R'' , which can be the same or different is hydrogen or a substituted or unsubstituted hydrocarbyl having from 1 to 30 carbon atoms or combinations thereof or two or more carbon atoms are joined together to form a part of a substituted or unsubstituted ring or ring system having 4 to 30 carbon atoms, R''' is one or more or a combination of the group consisting of carbon, germanium, silicon, phosphorus and nitrogen

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atoms containing radical bridging two $(C_5H_{5-d-f}R''_d)$ rings, or bridging one $(C_5H_{5-d-f}R''_d)$ ring to Hf; each Q which can be the same or different is selected from the group consisting of hydride, substituted and unsubstituted hydrocarbyl having from 1 to 30 carbon atoms, halogen, alkoxides, aryloxides, amides, phosphides and combinations thereof; two Q's together form an alkylidene ligand or a cyclometallated hydrocarbyl ligand or other divalent anionic chelating ligand; where g is an integer corresponding to the formal oxidation state of Hf, d is 0, 1, 2, 3, 4 or 5, f is 0 or 1 and e is 1, 2 or 3, and the polymer product has a melt index less than 0.1 dg/min (ASTM D-1238-F or ASTM D-1238-E) without the addition of hydrogen to the process.

~~24.58~~ (four times amended) A continuous gas phase process for polymerizing olefins excluding cyclic olefins in a fluidized bed gas phase reactor in the presence of a catalyst system to produce a polymer product, the catalyst system comprising an activator and a bulky ligand hafnium transition metal metallocene catalyst represented by the formula:



wherein $(C_5H_{5-d-f}R''_d)$ is an unsubstituted or substituted cyclopentadienyl ligand bonded to Hf, wherein at least one $(C_5H_{5-d-f}R''_d)$ is substituted with at least one R'' which is an alkyl group selected from the group consisting of n-propyl, isopropyl, isobutyl and n-pentyl, each additional R'' , which can be the same or different is hydrogen or a substituted or unsubstituted hydrocarbyl having from 1 to 30 carbon atoms or combinations thereof or two or more carbon atoms are joined together to form a part of a substituted or unsubstituted ring or ring system having 4 to 30 carbon atoms, R''' is one or more or a combination of the group consisting of carbon, germanium,

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silicon, phosphorus and nitrogen atoms containing radical bridging two $(C_5H_{5-d-f}R''_d)$ rings, or bridging one $(C_5H_{5-d-f}R''_d)$ ring to Hf; each Q which can be the same or different is selected from the group consisting of hydride, substituted and unsubstituted hydrocarbyl having from 1 to 30 carbon atoms, halogen, alkoxides, aryloxides, amides, phosphides and combinations thereof; two Q's together form an alkylidene ligand or cyclometallated hydrocarbyl ligand or other divalent anionic chelating ligand; where g is an integer corresponding to the formal oxidation state of Hf, d is 0, 1, 2, 3, 4 or 5, f is 0 or 1 and e is 1, 2 or 3, and the polymer product has a melt index less than 10 dg/min (ASTM D-1238-F or ASTM D-1238-E) without the addition of hydrogen to the process.

Reasons for Allowance

2. The prior rejection over Harrington is withdrawn because applicants have excluded cyclic olefins from the claimed scope. Upon further consideration, the rejection over Doyle is withdrawn because Doyle has not distinguished between methyl substituents and other alkyl substituents, whereas applicants have shown that the claimed hafnocenes show higher activity than methyl substituted hafnocenes. The rejection over Jejelowo is withdrawn in view of traversal arguments advanced in the Appeal Brief. The prior double patenting rejection is withdrawn because the copending claims have been amended to require a mixed hafnocene system.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Watanabe et al. (EP 481480 A1) shows in Example 5 the claimed catalyst and an

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activator, but discloses such catalysts only for oligomerization, a process which is deemed to be distinct from that claimed instantly. Watanabe discloses a product having a degree of polymerization of at most 20, and there is no reason to believe that the instantly claimed process encompasses the production of such small molecules. On the contrary, one of the implied benefits of the claimed process is the production of high molecular weight polymers (pg. 3, lines 17-20), and all of the examples generate polymers with Mw values of greater than 200,000. Although neither the specification nor the claims of the instant application recites a minimum size of the polymer produced by the claimed process, the indication of allowability over Watanabe is based upon an interpretation of "polymerization" which would not include processes wherein the majority product comprises oligomers of 20 or fewer repeat units.

Conclusion

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rob Rabago whose telephone number is (703) 308-4347. The examiner can normally be reached from 6:30 to 3:00.

If attempts to reach the examiner by telephone are unsuccessful and the matter is urgent, the examiner's supervisor, David Wu, can be reached on (703) 308-2450. The fax phone numbers for the organization where this application or proceeding is assigned are: (703) 305-5408 (official), (703) 305-3599 (official after final) and (703) 306-3429 (unofficial).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0651.

RRabago *RR*
February 6, 2001

David W. Wu
DAVID W. WU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700

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ATTACHMENT TO AND MODIFICATION OF
NOTICE OF ALLOWABILITY (PTO-37)
(November, 2000)

NO EXTENSIONS OF TIME ARE PERMITTED TO FILE CORRECTED OR FORMAL DRAWINGS, OR A SUBSTITUTE OATH OR DECLARATION, notwithstanding any indication to the contrary in the attached Notice of Allowability (PTO-37).

If the following language appears on the attached Notice of Allowability, the portion lined through below is of no force and effect and is to be ignored¹:

A SHORTENED STATUTORY PERIOD FOR RESPONSE to comply with the requirements noted below is set to EXPIRE **THREE MONTHS** FROM THE "DATE MAILED" of this Office action. Failure to comply will result in ABANDONMENT of this application. ~~Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).~~

Similar language appearing in any attachments to the Notice of Allowability, such as in an Examiner's Amendment/Comment or in a Notice of Draftperson's Patent Drawing Review, PTO-948, is also to be ignored.

¹ The language which is crossed out is contrary to amended 37 CFR 1.85(c) and 1.136. See "Changes to Implement the Patent Business Goals", 65 Fed. Reg. 54603, 54629, 54641, 54670, 54674 (September 8, 2000), 1238 Off. Gaz. Pat. Office 77, 99, 110, 135, 139 (September 19, 2000).